



Building Department

A GUIDE TO SWIMMING POOLS

Every person owning land on which there is situated a swimming pool, which contains twenty four (24) inches or more of water in depth at any point, shall erect and maintain thereon a four foot (4'- 0") enclosure with a self-closing and self-latching gate surrounding the property or pool area sufficient to make such body of water inaccessible to small children. In addition to the required enclosure, a pool alarm is required by Public Act 99-140 that states when a person or object of fifteen (15) lbs. enters the water, the pool alarm must emit a sound of at least fifty (50) decibels.

ILLUSTRATIONS TO ISPSC –2015 and ANSI/APSP-7

The drawings contained in this brochure pertain to the 2015 International Residential Code, the 2015 International Building Code, portion of the 2018 CT State Building Code and area for illustration purposed only.

Pool Barrier, Fence, Gate, Closer, and Alarm Requirements

<u>COMMERCIAL/PUBLIC POOLS</u>	<u>RESIDENTIAL POOL</u>
<p>2015 IBC Portion of the 2018 CT State Building Code</p> <p>Section 3109 ANSI/APSP 7 2017 NEC (NFPA 70)</p>	<p>2015 IRC Portion of the 2018 CT State Building Code</p> <p>Section R326 – Swimming pools, spas & hot tubs Chapter 42 – Swimming pools (Electrical) ANSI/APSP 4, 5, 6, and 7</p>

Barriers

Barriers are not child proof, but they provide layers of protection for a child when there is a lapse in adult supervision. Barriers give parents additional time to find a child before the unexpected can occur.

Barriers include a fence or wall, door alarms for the house, a power safety cover over the pool and water surface alarm.

Barrier Locations

Barriers should be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.

Fences

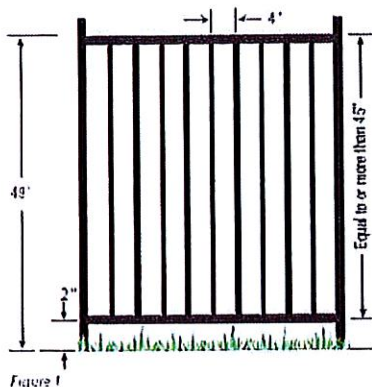
A fence completely surrounding the pool is better than one with the house serving as the fourth side. Fences shall be a minimum of 4 feet high, although fences 5 feet or higher are preferable.

If the home serves as one side of the barrier install door alarms on all doors leading to the pool area.

Pool covers add another layer of protection and there are a wide variety of styles on the market. Keep pool covers well-maintained and make sure the control devices are kept out of the reach of children.

How To Prevent a Child from Getting OVER a Pool Barrier

A young child can get over a pool barrier if the barrier is too low or if the barrier has handholds or footholds to use when climbing. The top of a pool barrier shall be at least 48 inches above grade, measured on the side of the barrier which faces away from the swimming pool.



To eliminate handholds and foot holds, and minimize the size of the opening in a barrier's construction

How to Prevent a Child from Getting UNDER a Pool Barrier

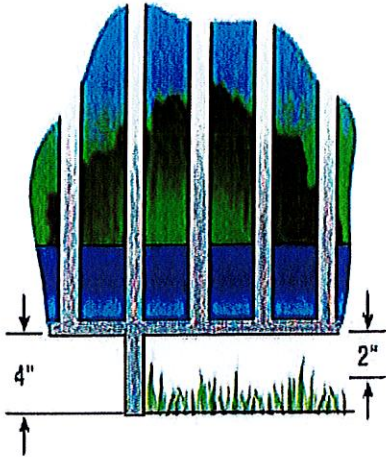
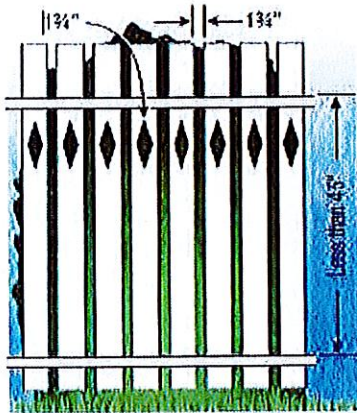


Figure 10

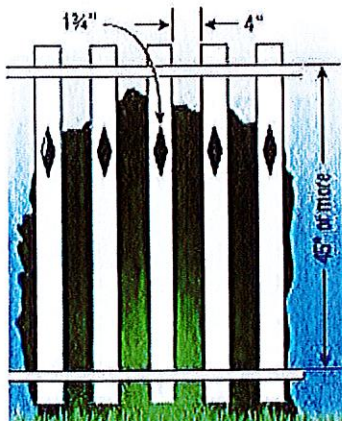
For any pool barrier, the maximum clearance at the bottom of the barrier shall not exceed **4 inches** above the surface or ground when the measurement is done on the side of the barrier facing away from the pool. If the bottom of the gate or fence rests on a non-solid surface like grass or gravel, that measurement shall not exceed **2 inches**.

For a Barrier (Fence) Made Up of Horizontal and Vertical Members

If the distance between the top sides of the horizontal members is less than 45 inches, the horizontal members shall be on the swimming pool side of the fence.



The spacing between vertical members and within decorative cutouts shall not exceed 1 3/4 inches. This size is based on the foot width of a young child and is intended to reduce the potential for a child to gain a foothold and attempt to climb the fence.



If the distance between the tops of the horizontal members is 45 inches or more, the horizontal members can be on the side of the fence facing away from the pool. The spacing between vertical members shall not exceed 4 inches. If there are any decorative cutouts in the fence, the space within the cutouts shall not exceed 1 3/4 inches.

Figure 4

For Solid Barrier



Figure 2

No indentions or protrusions shall be present, other than normal construction tolerances and masonry joints.

For a Chain Link Fence

The mesh size shall not exceed $2\frac{1}{4}$ inches square unless slats, fastened at the top or bottom of the fence, are used to reduce mesh openings to no more than $1\frac{3}{4}$ inches. **NOTE: By zoning ordinance, NEW chain link fences are not allowed.** § 151.006(8)

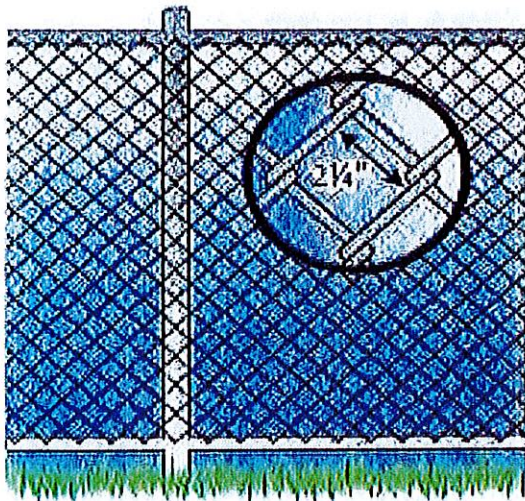


Figure 5

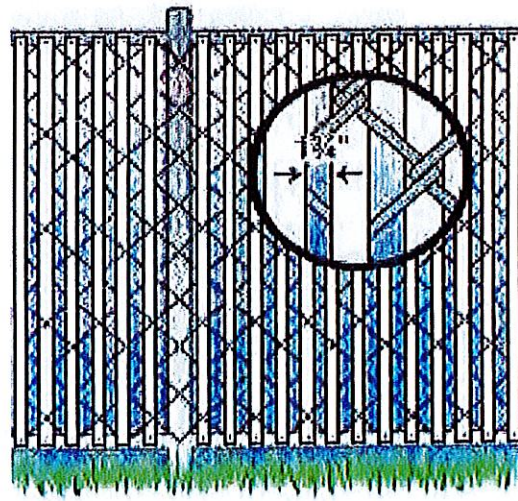


Figure 6

For a Fence Made Up of Diagonal Members or Latticework

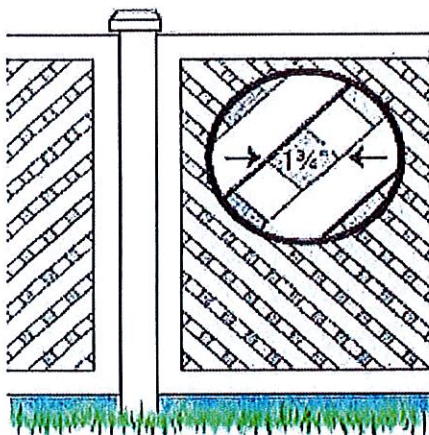


Figure 7

The maximum opening in the lattice shall not exceed $1\frac{3}{4}$ inches.

For Above Ground Pools

Above ground pools shall have barriers if less than 48" in height from exterior grade. The pool structure itself can serve as a barrier if the pool wall is 48" above exterior grade or a barrier can be mounted on top of the pool structure.

There are two possible ways to prevent young children from climbing up into an above ground pool. The steps or ladder can be designed to be secured, locked or removed to prevent access, or the steps or ladder can be surrounded by a barrier such as those described in these guidelines

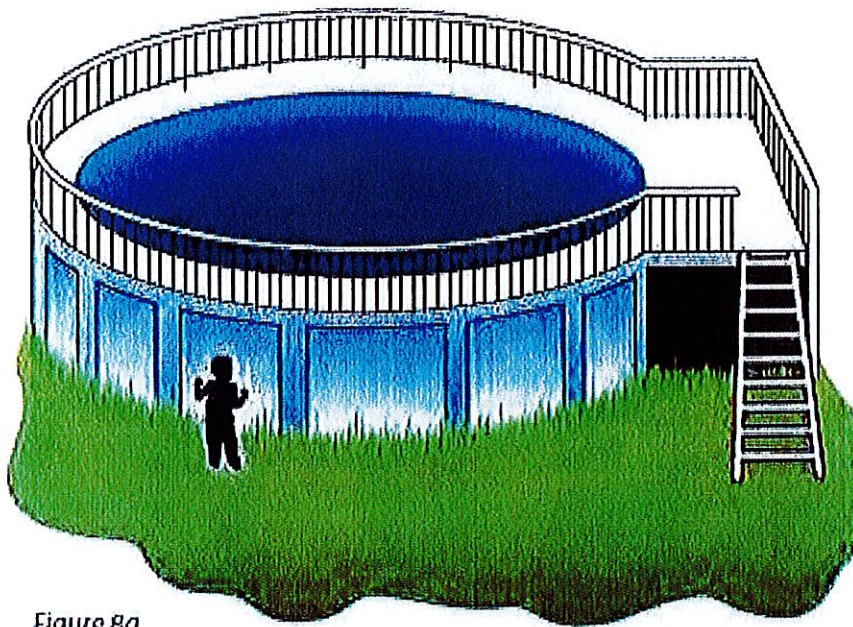


Figure 8a



Figure 8b



Figure 8c

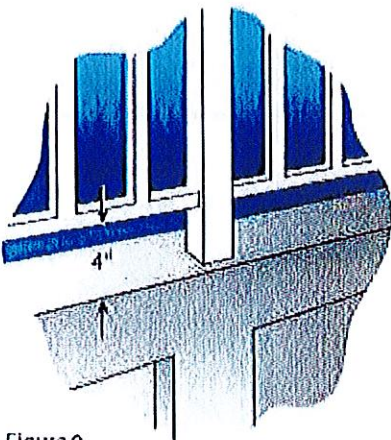


Figure 9

Above Ground Pool with Barrier on Top of Pool

If an above ground pool has a barrier on the top of the pool, the maximum vertical clearance between the top of the pool and the bottom of the barrier shall not exceed 4 inches

How to Prevent a Child from Getting THROUGH a Pool Barrier

Preventing a child from getting through a pool barrier can be done by restricting the sizes of openings in a barrier and by using self-closing and self-latching gates.

To prevent a young child from getting through a fence or other barrier, all openings shall be small enough so that a 4-inch diameter sphere cannot pass through. This size is based on the head breadth and chest depth of a young child.

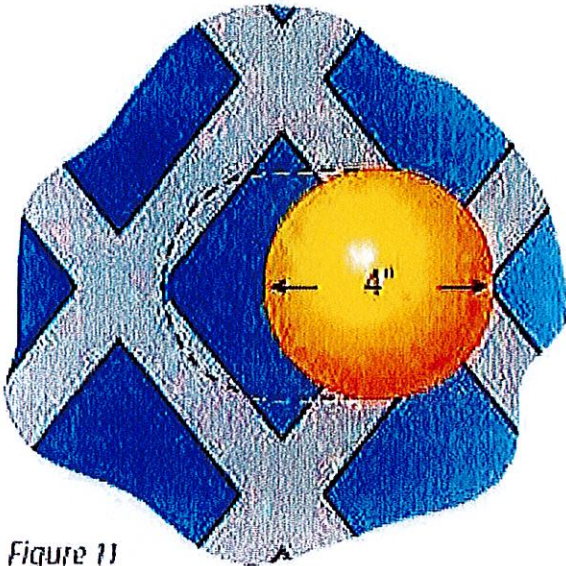


Figure 11

2012 IRC Code Reference
AG105.2.2

Removable Mesh Fences

Mesh fences are specifically made for swimming pools or other small bodies of water. Although mesh fences are meant to be removable, the safest mesh pool fences are locked into the deck so that they cannot be removed without the extensive use of tools.

Like other pool fences, mesh fences shall be a minimum of 48" in height. The distance between vertical support poles and the attached mesh, along with other manufactured factors, shall be designed to hinder a child's ability to climb the fence. The removable vertical support posts should extend a minimum of 3 inches below grade and they shall be spaced no greater than 40 inches apart. The bottom of the mesh barrier shall not be more than 1 inch above the deck or installed surface.

For more information on Removable Mesh Fencing see ASTM standard F 2286 – 05.



Gates

There are two kinds of gates which might be found on a residential property: pedestrian gates and vehicle or other types of gates. Both can play a part in the design of a swimming pool. All barrier gates shall be designed with self-latching devices.

Pedestrian Gates.

These are the gates people walk through. Swimming pool barriers shall be equipped with a gate or gates which restrict access to the pool. Gates shall open out from the pool and shall be self-closing and self-latching. If a gate is properly designed and not completely latched, a young child pushing on the gate in order to enter the pool area will at least close the gate and may actually engage the latch.

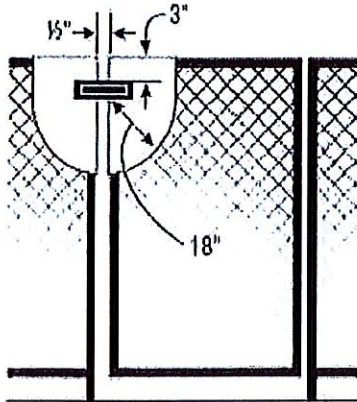


Figure 13

When the release mechanism of the self-latching device on the gate is less than 54 inches from the bottom of the gate, the release mechanism for the gate shall be at least 3 inches below the top of the gate on the side facing the pool. Placing the release mechanism at this height prevents a young child from reaching over the top of a gate and releasing the latch.

Also, the gate and barrier shall have no opening greater than 1/2 inch within 18 inches of the latch release mechanism. This prevents a young child from reaching through the gate and releasing the latch.

All Other Gates (Vehicle Entrances, Etc.)

Other gates shall be equipped with self-latching devices. The self-latching devices shall be installed as described above for pedestrian gates.

Gate Closers

Be aware that not all gate styles and closers are compliant. Closers mounted on the exterior within 45" vertically of a cross member that provide a surface to gain a foothold are not compliant. Gates with cross members less than 45" apart and vertical pickets greater than 1-3/4" apart are not compliant. All of the rules on fences apply to gates as well.

Closers can be mounted at or near the top or bottom of the gate so long as there is not a cross member within 45" vertically of the closer. Spring hinges are most times the best choice.

The "Turtle Back" closer is an example of a non-compliant type.



When the House Forms Part of the Pool Barrier.



Figure 14

In many homes, doors open directly from the house onto the pool area or onto a patio leading to the pool. In such cases, the side of the house leading to the pool is an important part of the pool barrier. Passage through any door from the house to the pool shall be controlled by security measures.

Door Alarms

All doors that allow access to a swimming pool shall be equipped with an audible alarm which sounds when the door and/or screen are opened. Alarms shall meet the requirements of UL 2017 General-Purpose Signaling Devices and Systems, Section 77 with the following features:

Sound lasting for 30 seconds or more within 7 seconds after the door is opened.

The alarm shall have an automatic reset feature to temporarily deactivate the alarm for up to 15 seconds to allow adults to pass through house doors without setting off the alarm. The deactivation switch could be a touchpad (keypad) or a manual switch, and shall be located at least 54 inches above the threshold and out of the reach of children.

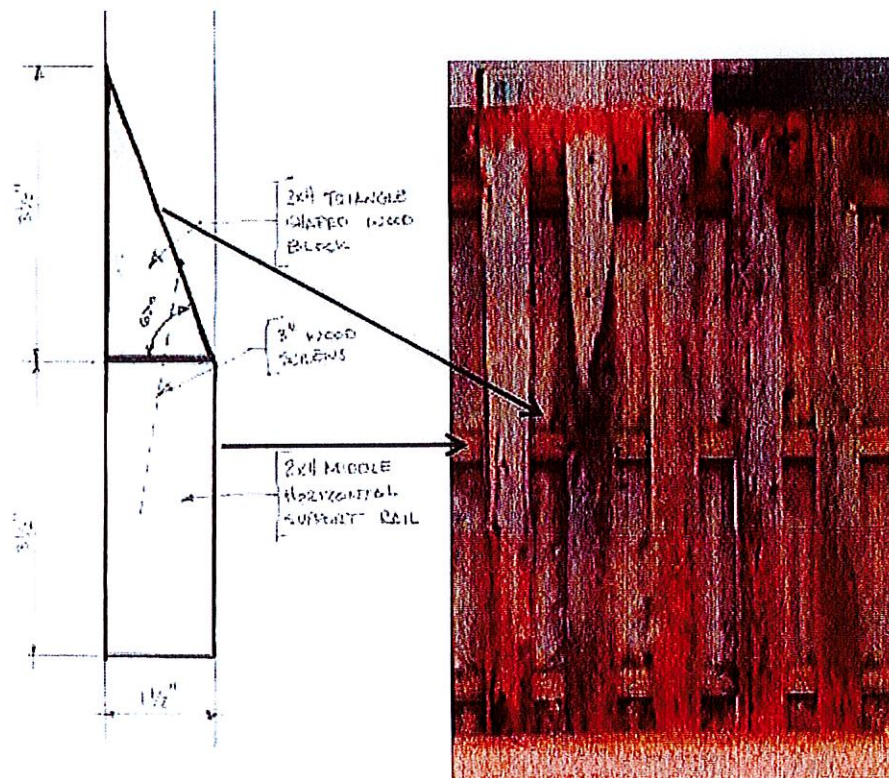
Self-closing doors with self-latching devices mounted at 54" may be used in conjunction with door alarms to safeguard doors which give access to a swimming pool.

Power Safety Covers

Power safety covers can be installed on pools to serve as security barriers, especially when the house serves as the fourth wall or side of a barrier. Power safety covers shall conform to the specifications in the ASTM F 1346-91 standard, which specifies safety performance requirements for pool covers to protect young children from drowning.

Indoor Pools

When a pool is located completely within a house, the walls that surround the pool shall be equipped to serve as pool safety barriers. Measures recommended for using door alarms, pool alarms and covers where a house wall serves as part of a safety barrier also apply for all the walls surrounding an indoor pool.



Exception to the 45" rule on a shadowbox fence. A triangular wood block can be placed on top of the center cross member to bring the shadow box fence into compliance

Outdoor Swimming Pools

An outdoor swimming pool, including an in-ground, above-ground or on-ground pool, hot tub or spa, shall be surrounded by a barrier which shall comply with the following:

1. The top of the barrier shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier which faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (51 mm) measured on the side of the barrier which faces away from the swimming pool. Where the top of the pool structure is above grade, such as an above-ground pool, the barrier may be at ground level, such as the pool structure, or mounted on top of the pool structure. Where the barrier is mounted on top of the pool structure, the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (102 mm).
2. Openings in the barrier shall not allow the passage of a 4-inch-diameter (102 mm) sphere.
3. Solid barriers which do not have openings, such as a masonry or stone wall, shall not contain indentations or protrusions, except for normal construction tolerances and tooled masonry joints.
4. Where the barrier is composed of horizontal and vertical members, and the distance between the tops of the horizontal members is less than 45 inches (1143 mm), the horizontal members shall be located on the swimming pool side of the fence. Spacing between vertical members shall not exceed 1-3/4 inches (44 mm) in width. Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1-3/4 inches (44 mm) in width.
5. Where the barrier is composed of horizontal and vertical members, and the distance between the tops of the horizontal members is 45 inches (1143 mm) or more, spacing between vertical members shall not exceed 4 inches (102 mm). Where there are decorative cutouts within vertical members, spacing within the cutouts shall not exceed 1-3/4 inches (44 mm) in width.
6. Maximum mesh size for chain link fences shall be a 2-1/4-inch (57 mm) square, unless the fence has slats fastened at the top or the bottom which reduce the openings to not more than 1-3/4 inches (44 mm).
7. Where the barrier is composed of diagonal members, such as a lattice fence, the maximum opening formed by the diagonal members shall not be more than 1-3/4 inches (44 mm).
8. Access gates shall comply with the requirements of Items 1 through 7, and shall be equipped to accommodate a locking device. Pedestrian access gates shall open outward away from the pool, and shall be self-closing and have a self-latching device. Gates, other than pedestrian access gates, shall have a self-latching device. Where the release mechanism of the self-latching device is located less than 54 inches (1372 mm) from the bottom of the gate, the release mechanism and openings shall comply with the following:
 - 8.1. The release mechanism shall be located on the pool side of the gate at least 3 inches (76 mm) below the top of the gate; and
 - 8.2. The gate and barrier shall have no opening larger than 1/2 inch (12.7 mm) within 18 inches (457 mm) of the release mechanism.

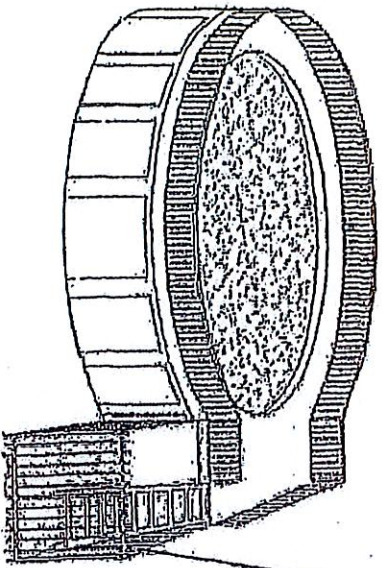
9. Where a wall of a dwelling serves as part of the barrier, one of the following conditions shall be met:
 - 9.1. The pool shall be equipped with a powered safety cover in compliance with ASTM F 1346
 - 9.2. Doors with direct access to the pool through that wall shall be equipped with an alarm which produces an audible warning when the door and/or its screen, if present, are opened. The alarm shall be listed and labeled in accordance with UL 2017. The deactivation switch(es) shall be located at least 54 inches (1372 mm) above the threshold of the door; or
 - 9.3. Other means of protection, such as self-closing doors with self-latching devices, which are approved by the governing body, shall be acceptable as long as the degree of protection afforded is not less than the protection afforded by Item 9.1 or 9.2 described herein.
10. Where an above-ground pool structure is used as a barrier or where the barrier is mounted on top of the pool structure and the means of access is a ladder or steps:
 - 10.1. The ladder or steps shall be capable of being secured, locked or removed to prevent access; or
 - 10.2. The ladder or steps shall be surrounded by a barrier which meets the requirements of Items 1 through 9. When the ladder or steps are secured, locked or removed, any opening created shall not allow the passage of a 4- inch-diameter (102 mm) sphere.

AG105.4 Prohibited Locations. Barriers shall be located to prohibit permanent structures/equipment or similar objects from being used to climb them.

Correct installation of Torsion type spring closer



Pool Fence Barrier Requirements



Pool structure as barrier:

- The ladder or steps either shall be capable of being secured, locked or removed to prevent access.
- The ladder or steps shall be surrounded by a barrier.
- Any opening created shall not allow the passage of a 4 inch diameter square.

Dwelling wall as a barrier:

- Doors with direct access to the pool through that wall shall be equipped with an exit alarm.

OR

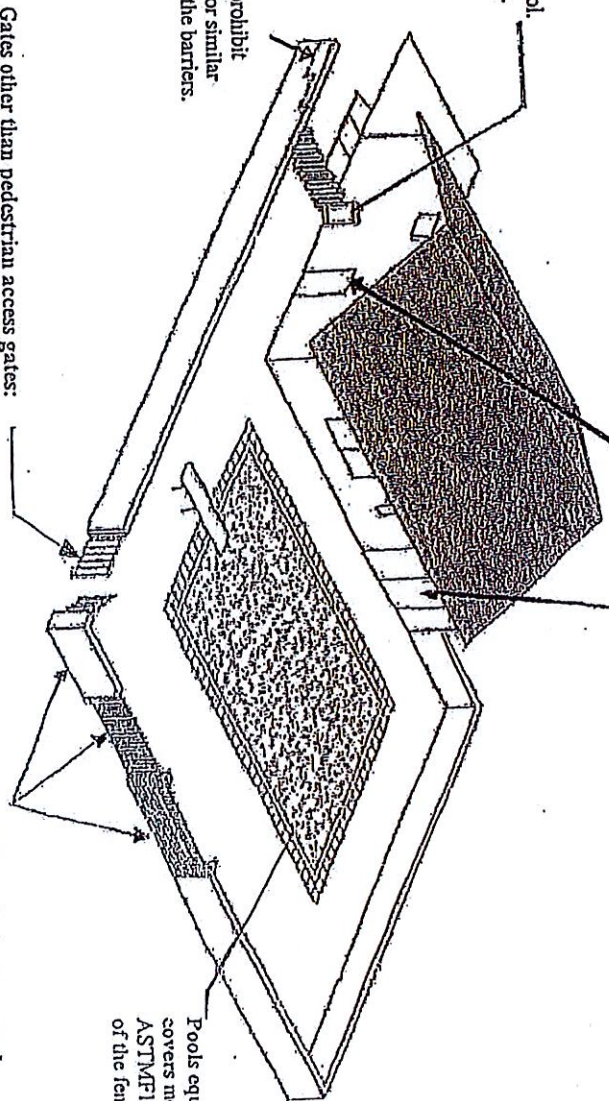
- with self-closing and self-latching devices mounted not lower than 54 inches above floor.
- If a pool fence barrier is placed between these doors and the pool, these doors need not be equipped with alarms, self-closing or self-latching devices.

Pedestrian access gates:

- Shall open outward away from the pool.
- Shall be self-closing and self-latching.

Prohibited locations:

- Barriers shall be located so as to prohibit permanent structures, equipment or similar objects from being used to climb the barriers.



- Gates other than pedestrian access gates:
- Shall have a self-latching device.

- 4 feet minimum fence height (as measured from side opposite the pool):
- All pool fence barriers must be non-climbable.

Pools equipped with approved pool safety covers meeting the performance standards of ASTM F1346-91 need not to comply with any of the fence/gate or door provision.

Section 3109- IBC Swimming Pools, Spas, and Hot Tubs

or

R326 Chapter 42 – IRC Swimming Pools, Spas, and Hot Tubs

PERMANENTLY INSTALLED SWIMMING POOLS

2017 National Electrical Code Requirements

Town of South Windsor

Building Department

PERMANENTLY INSTALLED SWIMMING POOLS ARE THOSE THAT ARE CONSTRUCTED IN THE GROUND OR PARTIALLY IN THE GROUND, AND ALL OTHERS CAPABLE OF HOLDING WATER WITH A DEPTH GREATER THAN 24 INCHES (1067 MM)

1) Pool Pump Receptacle (Outlet) and Wiring Method

- a. Swimming pool pump motor receptacle must be located at least 6' from the inside pool wall, must be grounded, and Ground Fault Circuit Interrupter (GFCI) protected.
- b. Receptacle must have an extra-duty, in-use, weatherproof cover that can be closed when the cord is plugged in.
- c. Depending on the horsepower of the pump motor, the circuit line for the pump motor may need to be a continuous line going directly to the panel box, and isolated from all other receptacles and loads. (see NEC Table 430.248)
- d. Grounding Conductor (ground wire) for the pump motor cannot be less than #12 AWG insulated copper grounded wire, and must be in conduit. (Exception: When entering a building the wire can change to NM) (Cannot use NM wire in conduit).
- e. Conduit
 - i. PVC – All PVC conduit* must be buried at least 18" deep (12" if GFCI protected prior to entering the ground).
 - ii. Metal – All Rigid Metal Conduit* must be at least 6" deep.

* Wires used in conduit must be single strand wires (ex: THWN, etc - NO NM or UF CABLE in Conduit).

2) Convenience Receptacle (Outlet) and Wiring Method

- a. At least one (1) 15- or 20-ampere convenience receptacle must be located no closer than 6' and no further than 20' from the inside pool wall (Can be existing and/or wired with any approved wiring method). This receptacle cannot be located more than 6 1/2' above the grade level, deck, or platform serving the swimming pool.
- b. Convenience receptacle must be Ground Fault Circuit Interrupter (GFCI) protected, Tamper Resistant (TR), and Weather Resistant (WR) type receptacle.
- c. Must have an extra-duty, in-use, weatherproof cover that can be closed when in use (for all wet locations).
- d. May need to be separate from the pool pump receptacle wiring.
- e. Wiring
 - i. UF cable if buried must be at least 24" deep (12" if GFCI protected prior to entering the ground).
 - ii. PVC – All PVC conduits* must be buried at least 18" deep (12" if GFCI protected prior to entering the ground).
 - iii. Metal – All Rigid Metal Conduits* must be at least 6" deep

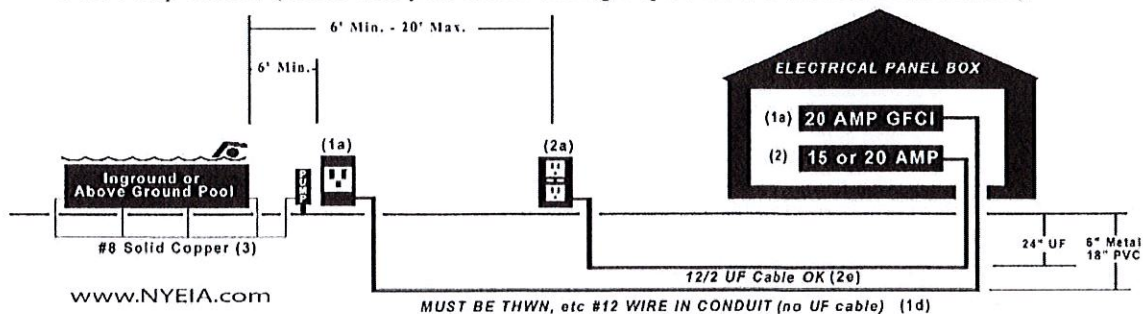
* Wires used in conduit must be single strand wires (ex: THWN, etc. - NO NM or UF CABLE in Conduit).

3) Bonding The Pool

- a. All metal parts must be bonded together using a #8 (or larger) solid copper wire.
- b. Must use non-corrosive clamps that are listed for direct burial use.
- c. Conductive pool shells must be bonded in a minimum of four (4) equal points uniformly spaced around the pool
- d. Nonconductive pool shells must have a #8 (or larger) solid, bare copper wire 18"-24" from the inside pool wall under the perimeter surface 4"-6" below the final grade.
- e. A minimum of nine (9) square inches of corrosion resistant metal must be in the water to bond the water.

4) Other

- a. Building Permits are required. Secure a Building Permit from your municipality prior to beginning work.
- b. Pool Alarms are required. (Check with your local Building Department for additional information).
- c. Pool Pump Timers: (Check with your local Building Department for additional information).



PLEASE CONTACT SOUTH WINDSOR BUILDING DEPARTMENT IF YOU HAVE ANY QUESTIONS

1540 Sullivan Ave. South Windsor, CT 06074

(860) 644-2511 Ext. 2230

*Substitute House Bill No. 5070**Public Act No. 99-140**An Act Concerning Alarms for New Swimming Pools*

Be it enacted by the Senate and House of Representatives in General Assembly convened:

(NEW) (a) As used in this section, "pool alarm" means a device which emits a sound of at least fifty decibels when a person or an object weighing fifteen pounds or more enters the water in a swimming pool.

(b) No building permit shall be issued for the construction or substantial alteration of a swimming pool at a residence occupied by, or being built for, one or more families unless a pool alarm is installed with the swimming pool.

Approved June 8, 1999. Effective October 1, 1999

THE DOOR ALARM SHALL:

- Produce an audible warning when the door and its screen or storm door are opened.
- The alarm shall sound continuously for a minimum of 30 seconds.
- Audible warning must sound within 7 seconds after door is opened.
- Must be capable of being heard throughout the house during normal household activities.
- The alarm shall automatically reset under all conditions.
- The alarm shall be equipped with a manual means to temporarily deactivate the alarm for a single opening.
- Deactivation shall last no longer than 15 seconds.
- The deactivation device shall be located at a minimum of 54 inches above the door threshold.

SECTION 305.4 ISPSC

